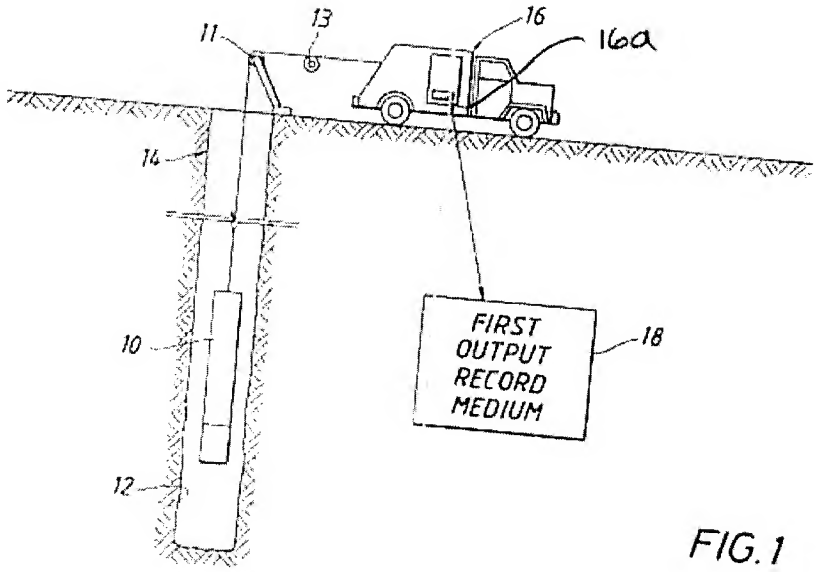

11
13
16
16a
14
10
12
FIRST OUTPUT RECORD MEDIUM
18

FIG. 1

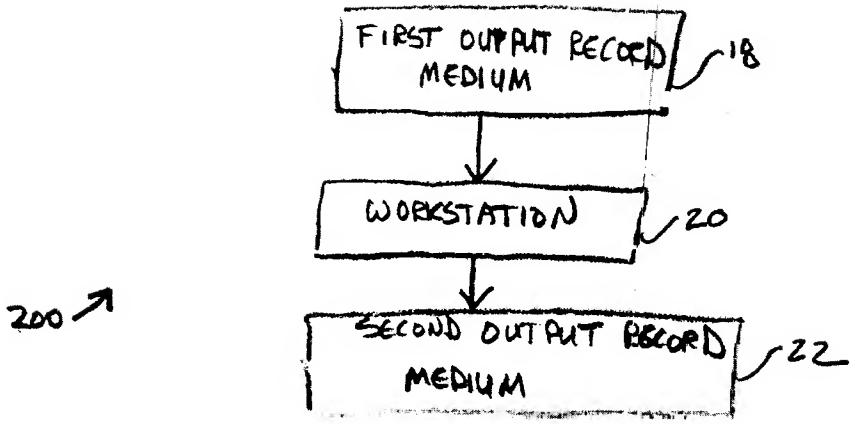

FIRST OUTPUT RECORD MEDIUM
18
WORKSTATION
20
SECOND OUTPUT RECORD MEDIUM
22
200

FIG. 2

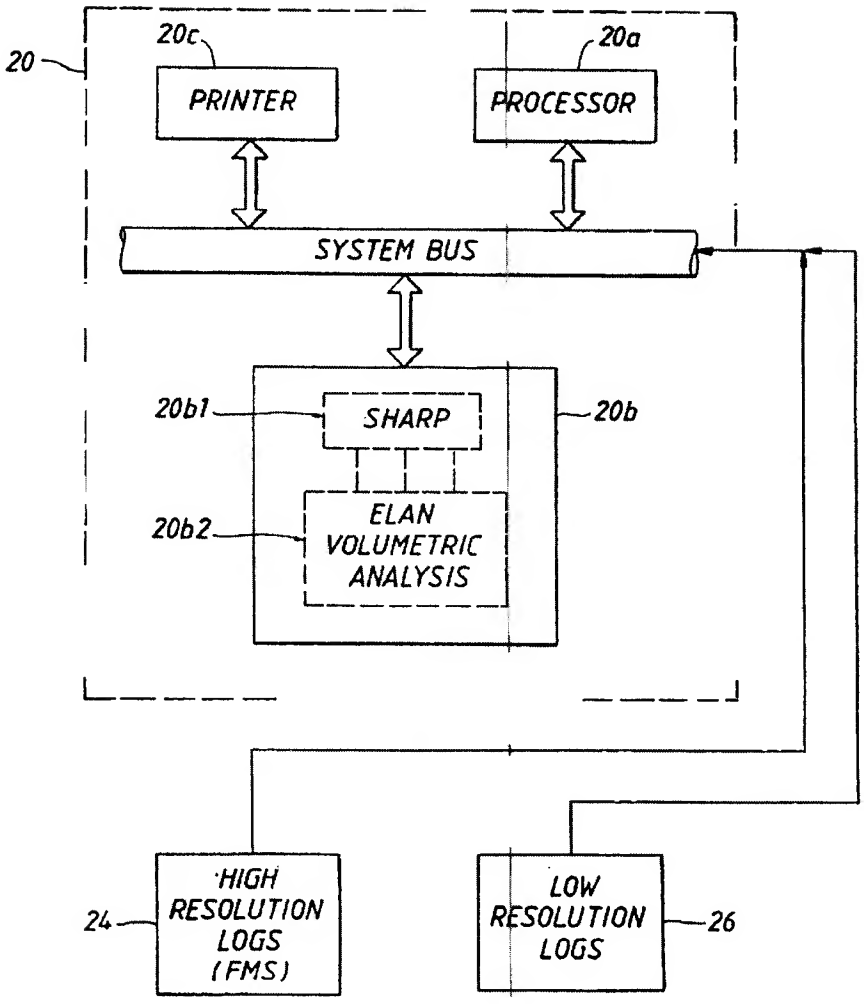

20
20c
PRINTER
20a
PROCESSOR
SYSTEM BUS
20b1
SHARP
20b
20b2
ELAN
VOLUMETRIC
ANALYSIS
24
HIGH
RESOLUTION
LOGS
(FMS)
LOW
RESOLUTION
LOGS
26

FIG. 3

FIG.4

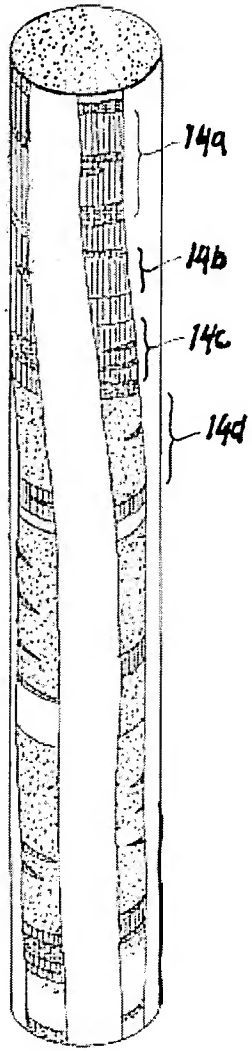
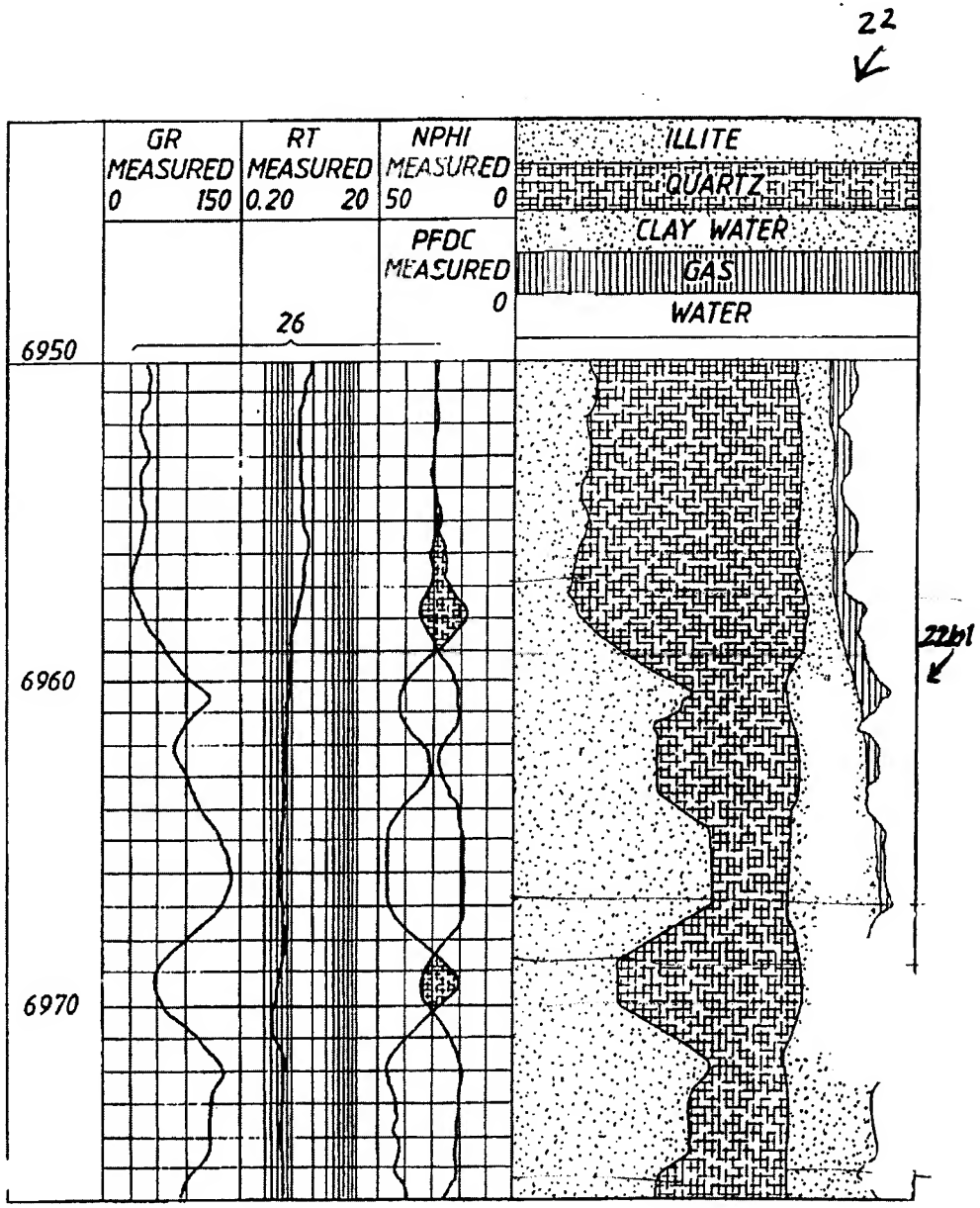

14a
14b
14c
14d

FIG.5


22
GR
MEASURED
0 150
RT
MEASURED
0.20 20
NPHI
MEASURED
50 0
PFDC
MEASURED
0
26
ILLITE
QUARTZ
CLAY WATER
GAS
WATER
6950
6960
6970
22b1

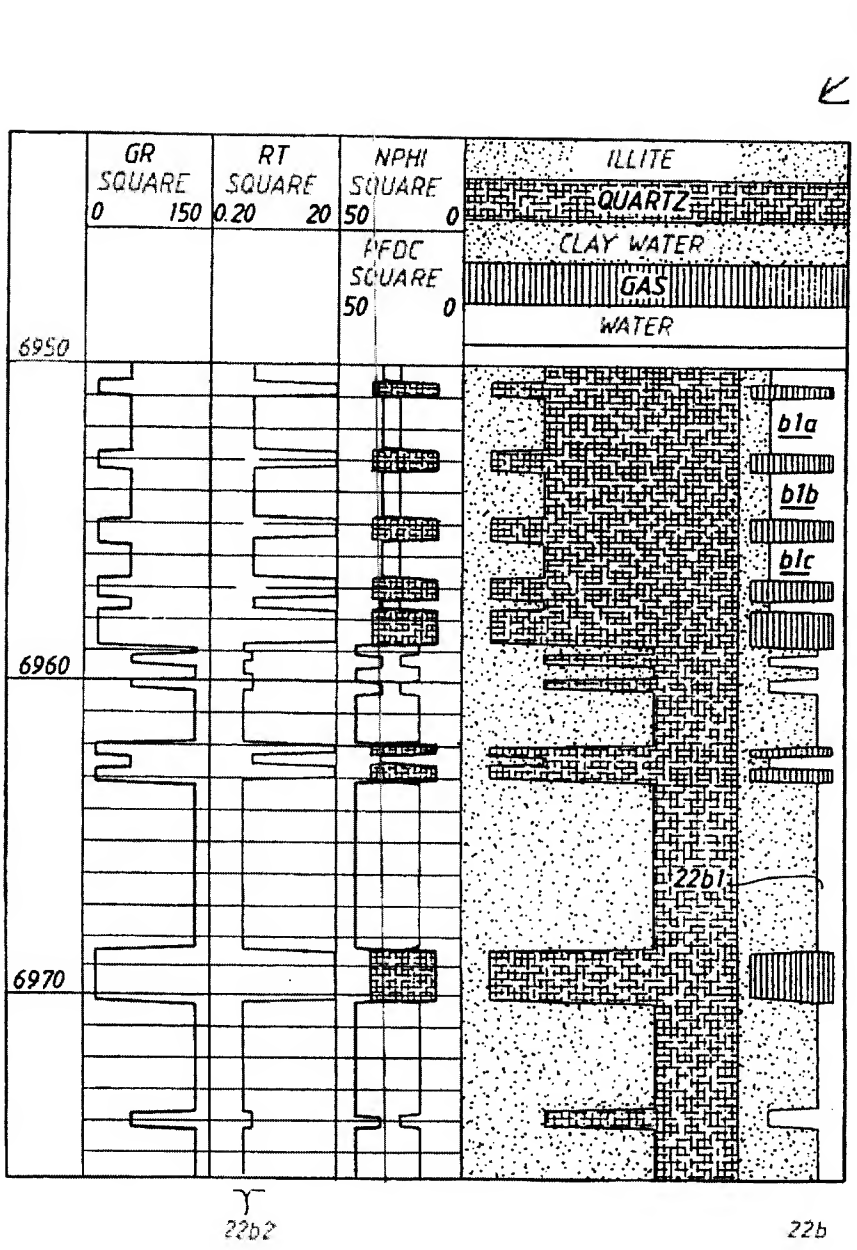

22'
GR
SQUARE
0 150
RT
SQUARE
0.20 20
NPHI
SQUARE
50 0
PFDC
SQUARE
50 0
ILLITE
QUARTZ
CLAY WATER
GAS
WATER
6950
6960
6970
b1a
b1b
b1c
22b1
22b2
22b

FIG. 5A

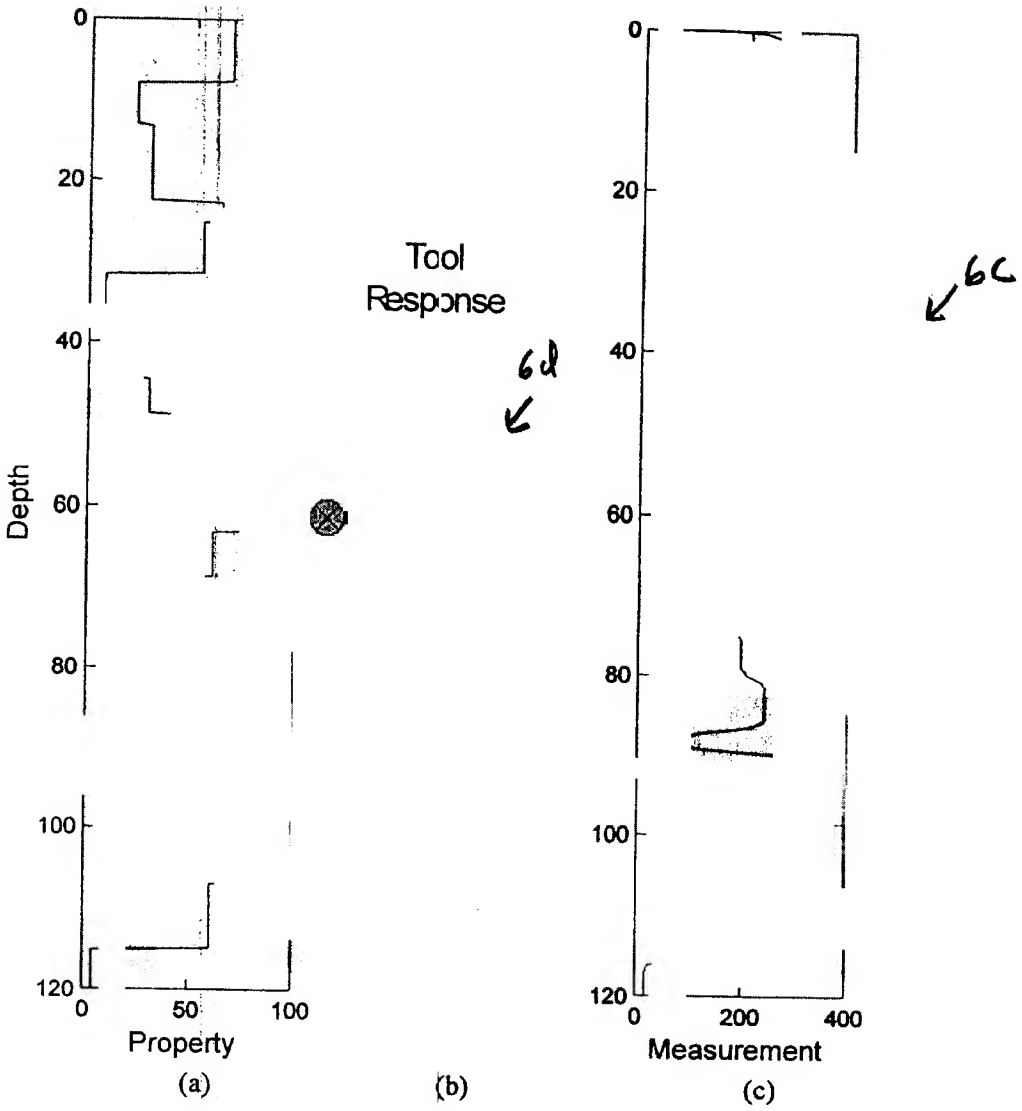
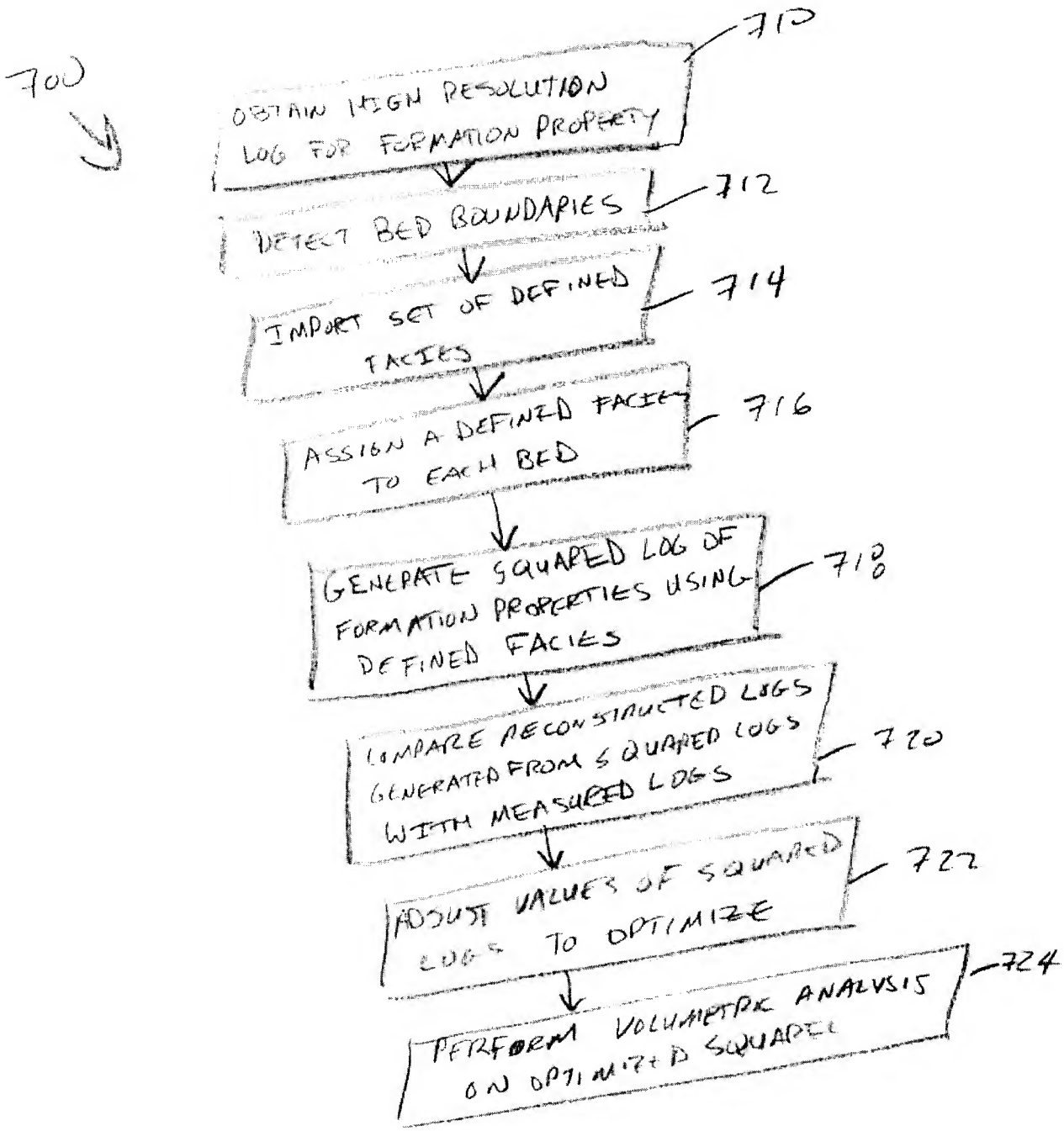

6a
6c
6d
Tool
Response
Depth
0
20
40
60
80
100
120
0
50
100
Property
(a)
(b)
0
20
40
60
80
100
120
0
200
400
Measurement
(c)

FIG. 6


700
OBTAIN HIGH RESOLUTION LOG FOR FORMATION PROPERTY
710
DETECT BED BOUNDARIES
712
IMPORT SET OF DEFINED FACIES
714
ASSIGN A DEFINED FACIES TO EACH BED
716
GENERATE SQUARED LOG OF FORMATION PROPERTIES USING DEFINED FACIES
718
COMPARE RECONSTRUCTED LOGS GENERATED FROM SQUARED LOGS WITH MEASURED LOGS
720
ADJUST VALUES OF SQUARED LOGS TO OPTIMIZE
722
PERFORM VOLUMETRIC ANALYSIS ON OPTIMIZED SQUARED
724

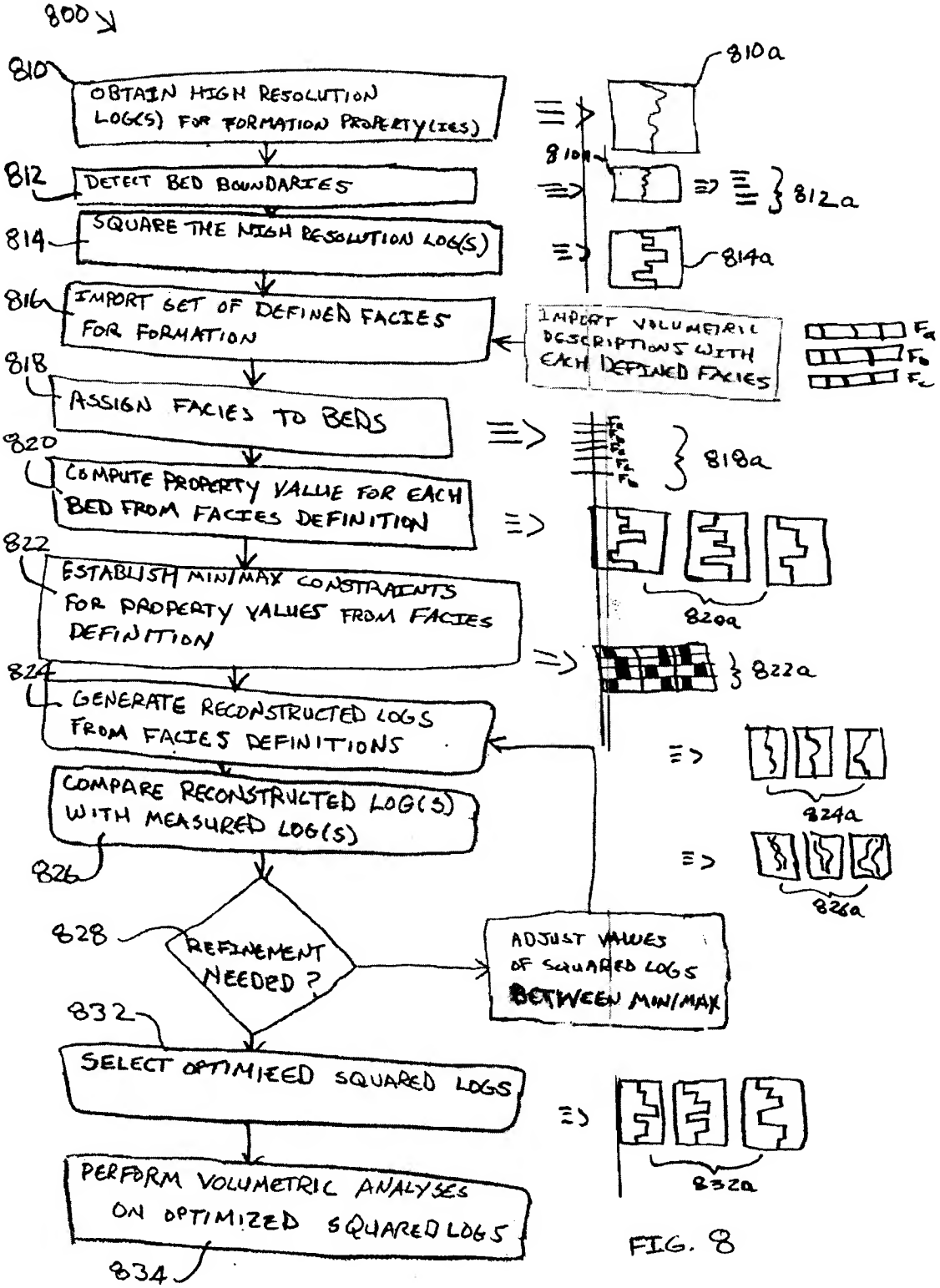

800
810
OBTAIN HIGH RESOLUTION LOG(S) FOR FORMATION PROPERTY(IES)
810a
812
DETECT BED BOUNDARIES
812a
814
SQUARE THE HIGH RESOLUTION LOG(S)
814a
816
IMPORT SET OF DEFINED FACIES FOR FORMATION
IMPORT VOLUMETRIC DESCRIPTIONS WITH EACH DEFINED FACIES
818
ASSIGN FACIES TO BEDS
818a
820
COMPUTE PROPERTY VALUE FOR EACH BED FROM FACIES DEFINITION
820a
822
ESTABLISH MIN/MAX CONSTRAINTS FOR PROPERTY VALUES FROM FACIES DEFINITION
822a
824
GENERATE RECONSTRUCTED LOGS FROM FACIES DEFINITIONS
824a
826
COMPARE RECONSTRUCTED LOG(S) WITH MEASURED LOG(S)
826a
828
REFINEMENT NEEDED ?
ADJUST VALUES OF SQUARED LOGS BETWEEN MIN/MAX
832
SELECT OPTIMIZED SQUARED LOGS
832a
834
PERFORM VOLUMETRIC ANALYSES ON OPTIMIZED SQUARED LOGS

FIG. 8

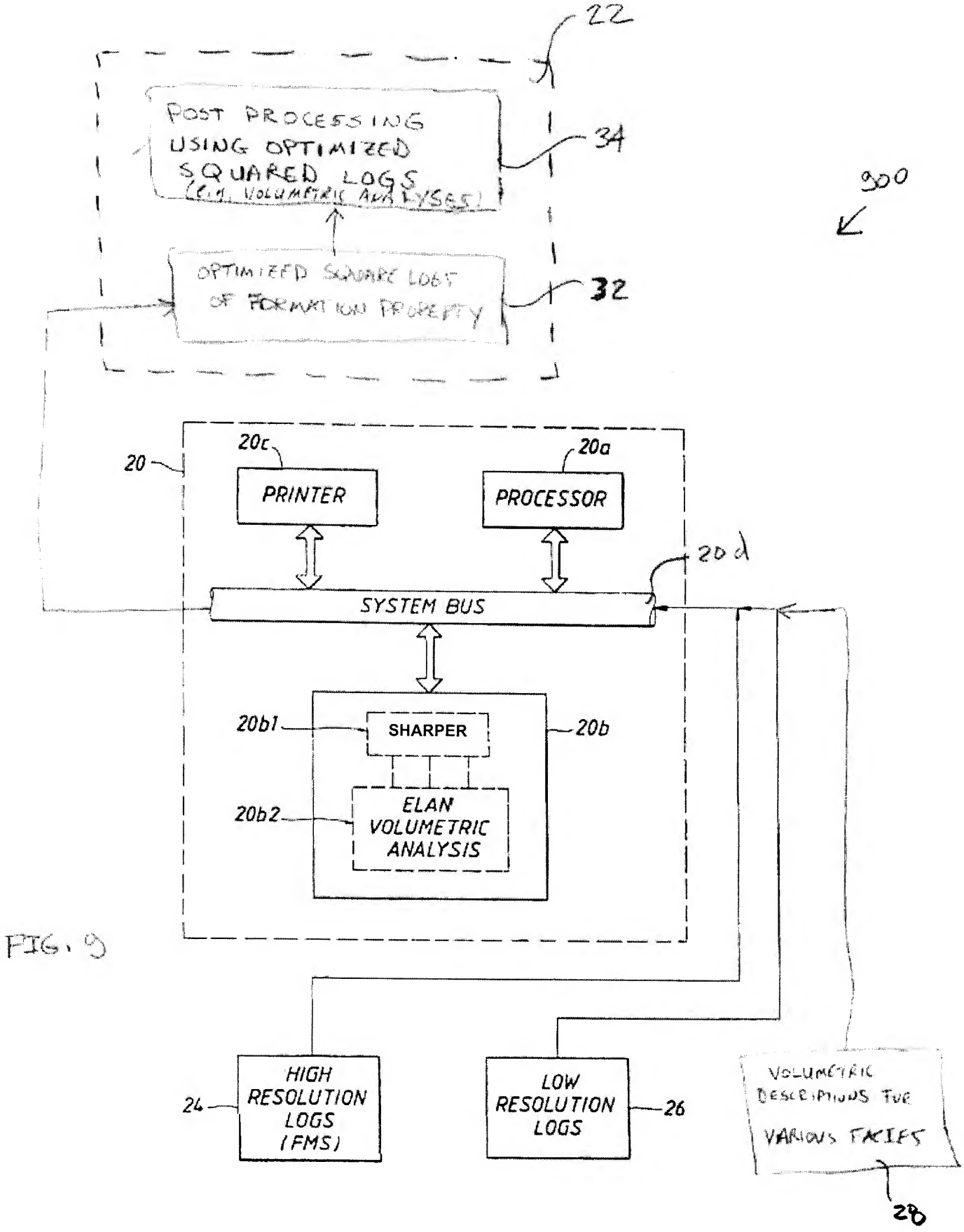

22
POST PROCESSING USING OPTIMIZED SQUARED LOGS (E.G. VOLUMETRIC ANALYSES)
34
OPTIMIZED SQUARE LOGS OF FORMATION PROPERTY
32
300
20
20c
PRINTER
20a
PROCESSOR
20d
SYSTEM BUS
20b1
SHARPER
20b
20b2
ELAN VOLUMETRIC ANALYSIS
24
HIGH RESOLUTION LOGS (FMS)
LOW RESOLUTION LOGS
26
VOLUMETRIC DESCRIPTIONS FOR VARIOUS FACIES
28

FIG. 9